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ART UNIT	PAPER NUMBER
2831	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

Office Action Summary	Application No.	Applicant(s)	
	10/587,442	AMATO, JOSEPH M.	
	Examiner	Art Unit	
	FARHANA HOQUE	2831	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 July 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on 7/17/2009 have been fully considered but they are not persuasive. Therefore, the rejections of these claims are sustained.

Claims 1, 6 and 13, Applicant argues that Look et al. does not disclose two interconnects and a resistance between the test pads being dependent on a distance along the interconnects between the test pads. Look et al. merely discloses a mask-misalignment structure 100 which has a single resistive element 115.

The Examiner respectfully disagrees. Reading the claims in the broadest sense, Look et al. discloses a mask-misalignment structure which includes two interconnects [105, 110] (see Fig. 1A) and a resistance [115] (see Fig. 1A) between the test pads [120] (see Fig. 1B) which is dependent on a distance along the interconnects between the test pads, in which Look et al. specifically states that the resistance value of the resistive element is inversely proportional to the contact area (known as test pads), the resistance increasing as the contact area decreases. Thus, changes in the contact area due to misalignment in the X dimension will produce changes in the resistance of the resistive element.

Therefore, the resistance of resistive element [115] (see Fig. 1A) is used to measure misalignment in the X dimension (see col. 4, line 63- col. 5, line 1).

Applicant further argues that Look et al. merely describes a single resistive element which has a resistance dependent on a contact area between the resistive element and the conductive layer. Therefore, even though the resistance can be measured between test terminals 155 and 165 on opposite sides of the resistive element 115 (Look, col. 5, lines 28-30), the resistance is merely dependent on a contact area between the resistive element 15 and the conductive layer 105. The resistance of the resistive element 115 is not dependent on a distance along the resistive element 115. Moreover, even if the contact area between the resistive element 115 and the conductive layer 105 were to depend on a distance between the test terminals, generally, Look nevertheless does not disclose a resistance dependent on a distance along multiple interconnects. Rather, Look merely includes a resistive element 115.

The Examiner respectfully disagrees, the resistance of the resistive element is dependent on a distance along the resistive element along multiple interconnects as shown in Fig. 1A. Look et al. describes a plurality of resistors defined by portions of the first and second layers, each resistor having first and second resistor terminals and exhibiting a resistance that varies in proportion to an extent of misalignment between the first and second layers on the X

dimension parallel to the plane and that does not vary in proportion to the misalignment in a Y dimension parallel to the plane (see claim 1).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-5 and 13-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Look et al. (U.S. Patent No. 6,393,714 B1).

With respect to claim 1, Look et al. discloses a structure comprising at least one proportional variable resistor [115] (see Fig. 2) suitable for electrically measuring unidirectional misalignment of stitched masks in etched interconnect layers [105, 110] (see Fig. 1A *termed as conductive element), said variable resistor comprising: [115] (see Fig. 2) at least a first mask [120] (see Fig. 1B) and a second mask (it is inherent that Look et al. teaches a second mask being present due to the superimposing of the first mask) that when superimposed comprise at least two test pads [150,155] (see Fig. 2 *termed as test terminals) and two interconnects [105, 110] (see Fig. 1A), wherein a resistance between the test pads is dependent on a distance along the interconnects [105, 110] (see Fig.

1A) between the test pads [150, 155] (see Fig. 2), and the resistance is indicative of the misalignment of the first and second masks (col. 4, line 63-col. 5, line 1).

With respect to claim 2, Look et al. discloses the structure according to claim 1 wherein the variable resistor comprises a directly proportional variable resistor [115] (see Fig. 2) which exhibits an increased resistance based on a greater distance between the test pads [115] (see Fig. 2; also col. 2, lines 10-13; also col. 4, line 63-col. 5, line 1).

With respect to claim 3, Look et al. discloses the structure according to claim 1 wherein the variable resistor comprises an inversely proportional variable resistor [115] (see Fig. 2) which exhibits a decreased resistance based on a greater distance between the test pads (col. 4, lines 63 - col. 5, lines 1; also col. 12, claim 15, lines 22-25).

With respect to claim 4, Look et al. discloses the structure to claim 1 wherein the interconnects comprise at least one stick type interconnect of a substantially rectangular geometry [105, 110] (see Fig. 1A *termed as conductive element).

With respect to claim 5, Look et al. discloses the structure according to claim 1 wherein the interconnects [105, 110] (see Fig. 1A) comprise at least one hook type interconnect [110] (see Fig. 1A *termed as conductive element); wherein the hook type interconnect comprises: an intermediate portion which is non-linear within a plane of the corresponding mask [105, 110] (see Fig. 3); and two ends separated by the intermediate portion, wherein both of the ends extend from the intermediate portion in substantially the same direction (see Fig. 3).

With respect to claim 13, Look et al. discloses a method of measuring stitched mask misalignment in etched interconnect layers [105, 110] (see Fig. 1A *termed as conductive element), the method comprising: providing a reference mask [120] (see Fig. 1B) comprising at least two test pads [150, 155] (see Fig. 1A *termed as test terminals); providing a second mask (it is inherent that Look et al. teaches a second mask being present due to the superimposing of the first mask) comprising at least one interconnect [105] (see Fig. 1A *termed as conductive element); superimposing said reference mask [120] (see Fig. 1B) and said second mask (it is inherent that Look et al. teaches a second mask being present due to the superimposing of the first mask) to provide at least one proportional variable resistor [115] (see Fig. 2) between the test pads [150, 155] (see Fig. 2) over the interconnect of the second mask, wherein the resistance between the test pads is dependent on a distance along the interconnect between the test pads (col. 4, line 63-col. 5, line 1); and electrically measuring

the resistance of said at least one proportional variable resistor [115] (see Fig. 2; col. 2, lines 10-13).

With respect to claim 14, Look et al. discloses the method according to claim 13 further comprising establishing an optimum resistance between said test pads, wherein the optimum resistance corresponds to a configuration in which the reference mask [120] (see Fig. 1B; also it is inherent that Look et al. teaches a second mask being present due to the superimposing of the first mask) and the second mask are aligned (see Fig. 3; also col. 5, lines 21-27; also col. 12, claim 16, lines 26-28).

With respect to claim 15, Look et al. discloses the structure according to claim 14 further comprising: comparing the measured resistance to said optimum resistance and adjusting the position of said masks to alignment (col. 5, lines 50-56; also col. 9, claim 2, lines 66-col. 11, claim 2, line 4).

With respect to claim 16, Look et al. discloses the structure according to claim 1, further comprising an electrical contact [115] (see Fig. 2) to electrically couple between the two interconnects [105, 110] (see Fig. 1A), wherein the resistance between the test pads is further dependent on a distance along the electrical contact between the two interconnects (col. 12, claim 16, lines 26-28).

With respect to claim 17, Look et al. discloses the structure according to claim 16, wherein the electrical contact [115] (see Fig. 2) is formed as part of the first and second masks [120] (see Fig. 1B; also it is inherent that Look et al. teaches a second mask being present due to the superimposing of the first mask) on the same mask as at least one of the interconnects [105] (see Fig. 1A).

With respect to claim 18, Look et al. discloses the structure according to claim 1, wherein the variable resistor [115] (see Fig. 2) is formed by at most two layers comprising the first and second masks [120] (see Fig. 1B; it is inherent that Look et al. teaches a second mask being present due to the superimposing of the first mask).

With respect to claim 19, Look et al. discloses the structure according to claim 1, wherein the two test pads [150, 155] (see Fig. 2) are both formed by the first mask [120] (see Fig. 1B).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 6-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Look et al. (U.S. Patent No. 6,393,714 B1) in view of McMurtry (U.S. Patent No. 4,153,998).

With respect to claim 6, Look et al. discloses a system for electrically measuring unidirectional misalignment of stitched masks in etched interconnect layers [105, 110] (see Fig. 1A *termed as conductive element), said system comprising: at least one proportional variable resistor [115] (see Fig. 2) comprising: a reference mask [120] (see Fig. 1B) comprising at least two test pads [150, 155] (see Fig. 2 *termed as test terminals) and at least one interconnect [105, 110] (see Fig. 1A); and a second mask (it is inherent that Look et al. teaches a second mask being present due to the superimposing of the first mask) comprising at least one interconnect [105] (see Fig. 2 *termed as conductive element); wherein a resistance between the test pads is dependent on a distance along the interconnects between the test pads (col. 4, line 63-col. 5, line 1).

Look et al. does not disclose a probe for testing the resistance between the test pads along said interconnect of said reference mask and said interconnect of said second mask when said masks are superimposed.

McMurtry discloses a probe for testing a resistance between the test pads along said interconnect of a reference mask and an interconnect of a second mask when said masks are superimposed [1] (see Figs. 1; also col. 2, lines 31-35).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Look et al. by additionally arranging a probe for testing the resistance as taught by McMurtry for determining at what point in space contact is established between a stylus and an object (see col. 1, lines 8-12).

With respect to claim 7, the combination of Look et al. and McMurtry discloses the structure according to claim 6, the at least one interconnect of said reference mask [120] (see Fig. 1B) comprising at least one stick type interconnect of a substantially rectangular geometry [105, 110] (see Fig. 1A *termed as conductive element).

With respect to claim 8, the combination of Look et al. and McMurtry discloses the structure according to claim 6, the at least one interconnect of said reference mask [120] (see Fig. 1B) comprising at least one hook type

interconnect wherein the hook type interconnect comprises: an intermediate portion which is non-linear [105, 110] (see Fig. 3 *termed as conductive element) within a plane of the corresponding mask; and two ends separated by the intermediate portion, wherein both of the ends extend from the intermediate portion in substantially the same direction [105, 110] (see Fig. 3 *termed as conductive element).

With respect to claim 9, the combination of Look et al. and McMurtry discloses the structure according to claim 6, the at least one interconnect of said second mask (it is inherent that Look et al. teaches a second mask being present due to the superimposing of the first mask) comprising at least one stick type interconnect of a substantially rectangular geometry [105, 110] (see Fig. 3 *termed as conductive element).

With respect to claim 10, the combination of Look et al. and McMurtry discloses the structure according to claim 6, the at least one interconnect of said second mask (it is inherent that Look et al. teaches a second mask being present due to the superimposing of the first mask) comprising at least one hook type interconnect, wherein the hook type interconnect comprises: an intermediate portion which is non-linear within a plane of the corresponding mask [105, 110] (see Fig. 3 *termed as conductive element); and two ends separated by the intermediate portion , wherein both of the ends extend from the intermediate

portion in substantially the same direction [110] (see Fig. 3 *termed as conductive element).

With respect to claim 11, the combination of Look et al. and McMurtry discloses the structure according to claim 6, wherein the variable resistor comprises an inversely proportional variable resistor which exhibits a decreased resistance based on the a greater distance between the test pads (col. 4, lines 63 – col. 5, lines 1; also col. 12, claim 15, lines 22-25).

With respect to claim 12, the combination of Look et al. and McMurtry discloses the structure according to claim 6, wherein the variable resistor [115] (see Fig. 2) comprises a directly proportional variable resistor which exhibits an increased resistance based on a greater distance between the test pads (col. 4, line 63-col. 5, line 1).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory

period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to FARHANA HOQUE whose telephone number is (571)270-7543. The examiner can normally be reached on Monday - Friday 8:30-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on (571) 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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